

Species	1995-1997	1992-1994	MBGBI imago
1303 <i>Agriphila selasella</i> (Hb.)	25 Jul 95	8 Aug 94	Jul, Aug
455 <i>Ypsolopha scabrella</i> (Linn.)	26 Jul 95	10 Aug 94	Jul-Sep
1307 <i>Agriphila latistria</i> (Haw.)	27 Jul 95	12 Aug 94	Jul-Sep

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EDITORIAL NOTE: Alasdair Aston's regular summaries of species emerging earlier than expected provide a valuable ongoing record. For the benefit of new subscribers, earlier summaries may be read in this journal at **106: 116; 107: 4; 107: 191; 110: 54; 110: 189; 111: 134; 111: 220; 111: 286; 112: 183-185, antea 29-30 and antea 87-91.**

Not quite observations of snow fleas *Boreus hyemalis* (L.) (Mecoptera: Boreidae) feeding

Two male snow fleas *Boreus hyemalis* were found on the sunny afternoon of 20 January 2001 on a snow patch, about 8 metres x 30 metres, at 600 metres altitude on the south-facing slope of Bera Bach, Snowdonia (VC 49, grid reference SH 667674). Mindful of the lack of information on which moss species *Boreus* utilise (Plant, 1994. *Provisional atlas of the lacewings and allied insects (Neuroptera, Megaloptera, Raphidioptera and Mecoptera) of Britain and Ireland*. Biological Records Centre, Huntingdon), samples of mosses from the turf around the edge of the snow patch were collected, and kindly identified by Dr David Stevens of CCW as *Dicranum scoparium*, *Hylocomium splendens*, *Rhytidiadelphus squarrosus* and *Polytrichum alpinum* var. *alpinum*.

On the evening of the day of capture, both *Boreus* were placed in a Petri dish with all the moss samples. During two hours of observation there was no sign of feeding on moss. Since the related genus *Panorpa* feeds on insects, several springtails were also placed in the Petri dish as potential food. These were ignored by the *Boreus* even when the springtails were under their feet. I subsequently learned that Withycombe (1921. On the life-history of *Boreus hyemalis* L. *Trans. ent. Soc.Lond.*, 1921: 312-318) found *Boreus* would feed on the soft contents of crushed flies, but not on live or whole insects.

One *Boreus* was then starved for two days in a tube with damp tissue paper but no moss. When it and a piece of *Rhytidiadelphus* were then placed in a pot, the *Boreus* climbed on to the moss and poked its mouthparts into a whorl of leaves. The mandibles were not visible, but the base of the mouthparts was in motion for about 10 minutes, suggesting the mandibles were working. Afterwards the leaf was peeled back and examined but no feeding damage could be seen under a x40 microscope.

The other mosses were presented to the *Boreus* in turn for 10-15 minutes. *Dicranum* was "felt" with the tips of the palps, but no feeding was attempted. *Hylocomium* leaf bases were probed briefly several times but no sustained use of

the mouthparts took place. *Boreus* walked over the *Polytrichum* several times but did not pause to probe it. A dead springtail was also walked over but ignored.

When *Rhytidiadelphus* was again placed in the pot, after five minutes of inactivity the *Boreus* again appeared to attempt to feed for four minutes with the mouthparts pushed down to a leaf base and the palps flattened back against the sides of the head so that the tips lay near the eyes. Later the *Boreus* was presented with a second sprig of *Rhytidiadelphus*, with a drop of pond water on it. After 10 minutes stationary, *Boreus* walked to the moss and probed the leaves again in the region where the water clung to the moss. This time there was no sign of the mouthparts working.

Similar observations were made on subsequent days. When presented with dampened *Rhytidiadelphus* after a day of starvation, both *Boreus* would probe the tight whorls of leaves, particularly if the leaves held water. However, the behaviour cannot be explained as simply drinking. The mouthparts were not merely inserted into the water but were forced down to the leaf bases, with the mandibles working on one occasion for 30 minutes. Sometimes the front legs were hooked over adjacent leaves to gain leverage. On occasions, the mouthparts were taken out of leaves holding water and other dry leaves were probed, suggesting water was not the object. No damage to leaves could be seen, no leaf fragments could be seen passing up the translucent rostrum, and leaf edges, which would have been easy to bite, were ignored. Occasionally the mandibles could be seen through the leaf and appeared to be scraping or skimming the leaf surface.

No recognisable droppings appeared in the pot even though the *Boreus* were kept in it for four and six days respectively.

Others have made similar observations. Withycombe (*op. cit.*) records "several imagines bruising the bases of green moss leaves with their mandibles and quite plainly feeding thereon for a minute or two at a time". Fraser (1943. Ecological and biological notes on *Boreus hyemalis* (L.) (Mecopt., Boreidae). *J. Soc. Br. ent.* 2: 125-129) describes how *Boreus* "walks about thrusting its rostrum into the interstices of the moss (*Polytrichum commune*) or bracts and bases of the leaves" but he then describes how young shoots of *Polytrichum* are nibbled from the apex downwards "until nothing is left but a conical shell of foliage", this being repeated until "quite a small area had been browsed over".

My observations are perhaps explained if the *Boreus* were attempting to feed but not finding what they were seeking. The elongate *Boreus* head seemed to be well accommodated by *Rhytidiadelphus* leaves: the mouthparts just reached the leaf base without the eyes being obscured. Perhaps there is another moss of similar dimensions which has some particularly nutritious structure at the leaf base. *Rhytidiadelphus squarrosus* is vegetative in Britain so *Boreus* seeking sporophytes in this species would be unsuccessful.

A more plausible explanation has been proposed by Ivo Raemakers of Wageningen University, who has studied *Boreus hyemalis* in the Netherlands

(Raemakers & Kleukers, 1999. De sneeuwspringer *Boreus hyemalis* in Nederland (Mecoptera: Boreidae). *Nederlandse Faunistische Mededelingen* **8**: 1-10). If *Boreus* obtains its food by extra-intestinal digestion, as suggested by Struebing (1958. Schneeinsekten. *Neue Brehm-Bucherei* **220**: 1-47), the lengthy periods with the mandibles working to no apparent effect could represent the excretion of digestive fluids and subsequent absorption of dissolved leaf cell contents. Such damage would not be visible at x40. But for the Foot and Mouth Disease outbreak, which resulted in walking in Snowdonia to be banned, I would have attempted to obtain more *Boreus* and investigate the matter further.

Lastly, information on the species of moss utilised by *Boreus* is not quite so sparse as Plant (*op. cit.*) suggests. Withycombe (1921) mentions larvae being found in *Mnium hornum*, *Dicranella heteromalla* and *Bryum atropurpureum* (= *bicolor*), the first being the preferred moss in Epping Forest, Essex. Struebing (1958) mentions *Mnium* spp. and *Polytrichum piliferum* being utilised in Germany.

I am very grateful to Dr Raemakers for suggesting the explanation for my observations and making this note worth publishing, and for supplying copies of the papers quoted. — JOHN BRATTON, 18 New Street, Menai Bridge, Anglesey LL59 5HN. (E-mail: J.Bratton@ccw.gov.uk).

***Megapenthes lugens* Redt. (Co.: Elateridae) bred from elm: a belated Windsor record, and further notes**

Windsor Forest appears to be the only place in Britain where this scarce click-beetle has occurred on several occasions during the past century. My first find there was in the Great Park: two ♀♀ in elm 5.iii.1938 (Allen, 1966, *Ent. Rec.* **78**: 19). All others known to me were in the Highstanding Hill area of the Forest, where a few collectors have met with an example or two, and one, P. Cook, several (hawthorn blossom, 1971). It was there, only a short way in from the road, in a piece of decaying elm log, that I found a larva (31.x.1971) which, though quite young, was readily identified later as that of *M. lugens* by the details of the caudal extremity. It fed up and produced a male adult on 19.vii.72. I am unaware of previous British breeding records.

The above serves to confirm elm as a (the?) primary host-tree of this beetle, in Britain at all events; it may be expected to become rarer than ever as a result of the ravages of Dutch elm disease. Of other trees that may be used, beech is much the likeliest – occasional adults having been found on (not in) beech in Windsor Forest. I know of no evidence for oak as a host-tree in Britain. I gather that elm was the source of the colony formerly existing at Highgate, north London, where the Jansons took specimens during more than one season, some (I believe) from hawthorn blossom – a favourite resort of the beetle. I have a pair from there dated 27.ii.1866 (♂) and 1865 (♀). Fowler (1890, *Col. Brit. Isl.*, **4**: 94) has a record “Stockwell, Surrey (Montague)”; this is in South London, and I once read that the source was an old or dead elm in a corner of Montague’s garden.— A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.